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FLAKE TOOLS IN THE AMERICAN ARCTIC: SOME SPECULATIONS

EDWIN N. WILMSEN

ABSTRACT

Two sites, Kogruk (at the summit of Anaktuvuk Pass, Alaska) and Engigstciak (at the head of the Firth River delta, Yukon Territory, Canada), have recently yielded flake-tool assemblages which show striking resemblances to a Eurasiatic flake-blade tradition based on a Levallois-Mousterian stone-chipping technique, and to the Clovis flake-blade tradition of America which appears to be based on a similar chipping technique. It is suggested that these traditions are historically related and that the Arctic sites provide a possible link between the two. The presence of incipient fluting in Siberia and at Engigstciak may prove significant. Dating is discussed in terms of the ecology and geology of the sites and is correlated with the probable periods of availability of the Bering land bridge. An upland-foothills zone is seen to be essentially continuous from central Asia to central North America. It is suggested that this zone provided the only environmentally compatible link between the two continents, and that it was therefore the most probable route of early hunting peoples into the New World.

AS CHARD (1958: 314) has observed, "The perennially fascinating problem of the origins of the aboriginal populations and cultures of America is one that can never be solved by New World data alone. It is an international problem that must be seen as a whole." This paper neither pretends to solve this problem nor to explore thoroughly all of its ramifications. However, it does review, within the context of this "whole," artifactual assemblages from two sites in the North American Arctic and offers an interpretation of these materials in the light of current archaeological knowledge on both sides of Bering Strait. The assemblages considered are: (1) the Kogruk complex from Anaktuvuk Pass in north-central Alaska, containing 572 artifacts and (2) the British Mountain complex from the Firth River Delta on the Arctic coast of Yukon Territory, Canada, with nearly 200 artifacts (Fig. 1).

The Kogruk materials were buried in glacial gravels on the top of a glacial kame terrace at the summit of Anaktuvuk Pass. The assemblage consists of large, thin, angular flakes of chert which retain well-defined bulbs of percussion, and other flakes similar to these in every way except that they are thick (Fig. 2, *a-c*). Some of these flakes exhibit unifacial retouching along their edges. In addition, there are a few bladelike flakes, three pointed-flake graters, a

few flakes that appear to be unifacial points, and two crude bifaces. Percussion flaking was the only technique employed in manufacturing these implements, and many strongly resemble Mousterian implements (Campbell 1961: 16).

The British Mountain assemblage is composed of large pebble choppers that are bifacially chipped on the cutting edge; large flakes of chert (some are thick, others thin) with adhering striking platforms and pronounced bulbs of percussion (Fig. 2, *d-f*); hooked graters; and burins on flakes (MacNeish 1956: 95, 1959a: 4, 1959b: 44). The chert appears to be chemically changed. MacNeish (in conversation) has suggested that the flakes were made by a Levalloisian technique. In addition, there are plano-convex scraping planes (MacNeish 1956: 95), unifacial leaf-shaped points, prismatic bladelike flakes (MacNeish 1959a: 4), and a few crude, bifacially worked points which appear to be roughly fluted (Fig. 2, *g*) and which are called Irish Fluted (MacNeish 1959a: 55, pl. 1). These materials were found at the Engigstciak site 2 to 3 feet below the surface at the top of a long, erosional remnant peninsula that juts out into the Firth River flood plain.

It is immediately obvious that these assemblages share a number of common elements. The most striking of these are: (1) association with topographical prominences, (2) use of chert for flaked implements, (3) percussion-flaking technique of Levallois-Mousterian appearance, (4) unifacial retouching of flake edges, and (5) similarities in the following artifacts: large bulbar flakes, pointed graters, bladelike flakes, crude bifaces, and possibly unifacial points. Campbell (1961: 12-13) has noted that the preponderance of cutting tools in the Kogruk assemblage implies a hunting orientation on the part of the people who made the tools, and has stated that "the close similarities in the stone working techniques, and implement types, of both complexes almost certainly testify to mutual membership in one cultural continuum . . . both Kogruk and British Mountain are part and parcel of the same flake tool genre" (1961: 16). Giddings (1961: 159) is of the opinion that these two complexes plus Palisades I (which,

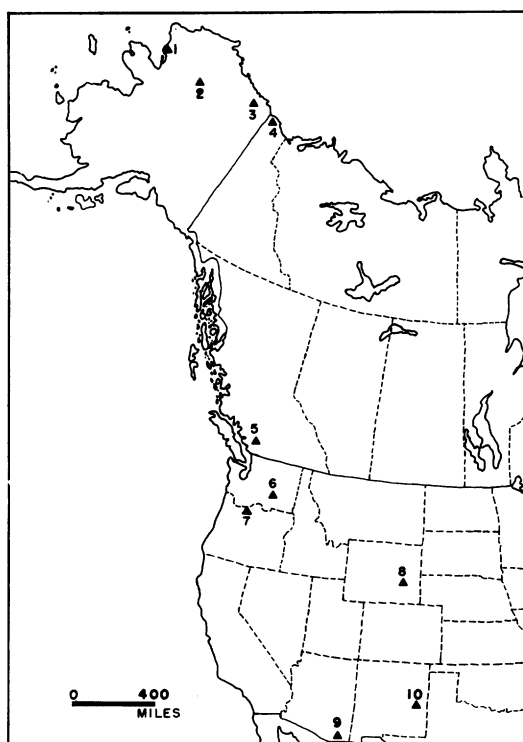


FIG. 1. Location of sites discussed in text. (1) Pali-sades, (2) Kogruk, (3) Subelik-Sadlerochit, (4) Engigstciak, (5) Fraser Canyon, (6) Lind Coulee, (7) The Dalles, (8) Hell Gap, (9) Lehner, (10) Elida.

however, does not appear to be related to British Mountain) comprise the earliest Arctic assemblages. To these can be added the recent, but still unpublished, discovery by Solecki (1962) of a site of British Mountain affinities on the northern flanks of the Subelik-Sadlerochit Mountains in northeastern Alaska.

None of these assemblages offers within itself a very strong temporal staff upon which to lean. There are, however, some clues which help to establish a relative date. The first of these clues stems from the stratigraphic position of British Mountain materials under Flint Creek materials which are, in turn, under all other materials except British Mountain at the site. Flint Creek stone materials exhibit a "Yuman" or Cordillerian chipping technique. These and antler tools from this level show a striking resemblance to materials from the Full Early period at The Dalles, Oregon (Cressman 1960: 41, 66-7, 74), the Lind Coulee site (Daugherty 1956), and the lower Fraser Canyon (Borden 1960), all of which have been dated by the radiocarbon meth-

od as falling before 6000 B.C. Secondly, British Mountain artifacts are the only ones at the site to occur in close association with buried marine clays, and they frequently occur under these clays. MacKay and Mathews are of the opinion that these clays were pushed up to their present location by the last glacial action to affect the site (MacKay and others 1961: 46-8). As no other artifacts occur in association with these clays, the possibility is strong that they are sufficiently old to have achieved this association either at a time when the clays were still partially exposed or to have been worked downward by frost heaving and cracking for a longer period of time than the other materials. Furthermore, during excavations at Engigstciak in the summer of 1962, I noticed that British Mountain artifacts invariably carried a thick, limy incrustation. Incrustation on other artifacts, while frequent, never approached the heavy accumulation common on British Mountain materials.

Fossil fauna associated with British Mountain materials is primarily the ubiquitous caribou, but extinct forms of bison and possibly horse are also present. Pine, spruce, and birch pollens are present in samples from the British Mountain level (MacNeish 1959b: 44). Since these pollens could have blown into the site from fairly great distances, their presence does not necessarily indicate a warmer climate. Martin (1958: 378) has suggested that the periglacial landscape was not entirely treeless, and he includes pine, spruce, and birch among the likely arboreal inhabitants of taiga environments. Campbell is convinced by contextual evidence that the Kogruk occupation occurred immediately after glacial retreat from the kame terrace upon which these implements are found, and before sod formation took place (Campbell 1961: 13). Perhaps we should see several groups of people living coincident with or just after a substantial, perhaps not maximum, late Wisconsin ice advance.

If we divert our attention momentarily to trans-Bering similarities, we may accomplish two things. The first of these is the definition of possible cultural relationships between the New World and the Old; the second is the establishment of possible temporal parameters for these relationships. The latter will be helpful in dating the materials under consideration. Between Siberian and British Mountain materials MacNeish (1959b: 46) sees

some very specific resemblances. The earliest occurrences of these resemblances is the Buryet [Buret]-Malta complex of the Trans-Baikal and perhaps it also occurs at the Chastino site of the Middle Lena. Here are also found tools struck from discoidal cores that include unifacial points both lenticular and lanceolate, hooked graters, scrapers, and central convex-type burins . . . end of the blade scrapers and blades and pebble choppers. These are very specific resemblances, and it is interesting to note that they occur in both the areas under discussion in the earliest horizons.

And Campbell states that (1961: 16-17):

The retouched flake tool, for instance, could almost masquerade as a Mousterian "point" and, in fact, several Kogruk specimens . . . startlingly resemble "points" from the Levallois-Mousterian level at Et-Tabun Cave at Mount Carmel . . . Kogruk implements somewhat resemble points, perforators, scrapers and blades from the earliest levels of the Malta site . . . Siberian Paleolithic sites in the Lena River Valley have produced artifacts quite closely akin to Kogruk flake-cores and blades . . . There are, apparently, even closer connections between the British Mountain complex and these Asian collections, especially in the categories of flake burins and bifaces. Thus, it appears that these two related American stone industries are, in turn, allied with the earliest known cultural remains of east central Siberia. And, while there are still many blanks to be filled, these far-flung intercontinental relationships provide a more accurate reckoning of the origins and antiquity of the flake and blade traditions in the American Arctic.

Since I tend to see few, if any, people present in the American Arctic before this time, I would view these cultural relationships as the result of a movement of people carrying this flake-blade technique into Alaska, Western Canada, and then into the further reaches of the North American continent.

Returning again to the question of time, I find a neat pattern emerging. Campbell (1961: 17) follows Griffin and dates Malta about 15,000-10,000 B.C. However, Bushnell and McBurney (1959), in an extremely stimulating paper, offer a somewhat different date on the basis of a broad view of seemingly related events. They suggest that the sites of Buret and Malta represent the earliest traces of human occupation in the Lake Baikal Siberian area and that this occupation is part of the extensive East Gravettian series of events which apparently began in southern European Russia and which is, in turn, an outgrowth of the Eastern Mousterian phase of the same area. The Buret-Malta assemblages include "rather unusual fluted artifacts resembling coarse polyhedric burins" (Bushnell and McBurney 1959: 98-9). They see no good reason why the Siberian sites should not be only slightly

later than the radiocarbon date of 24,000 B.C. for East Gravettian in Moravia and suggest a date of 20,000 B.C. for these sites (Bushnell and McBurney 1959: 100).

Not only cultural relationships but also possible routes at the right time must be examined in order to establish direct cultural relationships between areas. The cardinal fact in Old-New World routes is the presence of Bering Strait. It must be crossed, and it is almost axiomatic that, in the periods of time we are now considering, it must be crossed on foot. It has long been suspected that what is now a cold, wind-swept water barrier was once a land link between Asia and North America. Hopkins has presented a thorough study of the Bering land bridge with emphasis on the late Pleistocene period. He concludes that "The continents [Asia and North America] were separated by a seaway on the Bering-Chukchi platform during each interglacial interval of the Pleistocene, and they were connected by a land bridge during each glacial

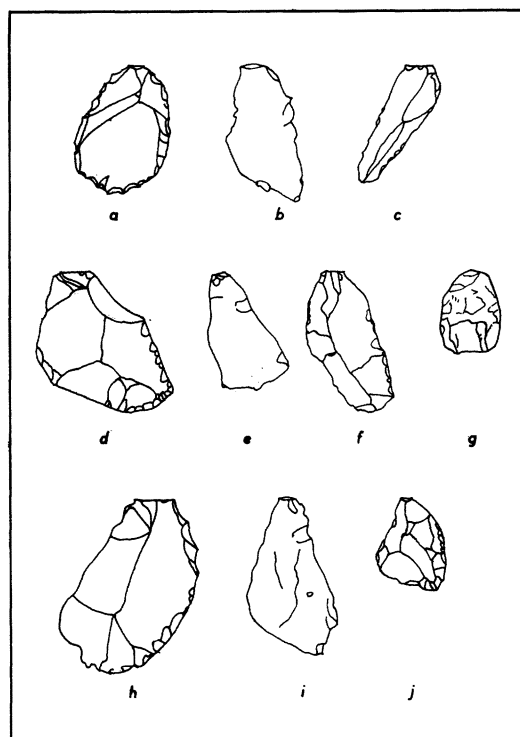


FIG. 2. Flake tools from sites as indicated. *a-c*, Kogruk, redrawn from Campbell 1961, Fig. II *a, b, c*; *d-g*, Engigstciak (British Mountain), redrawn from MacNeish 1959b, Pl. I, Nos. 5, 9, 10, 11 (*g* is an Irish Fluted point); *h-j*, Lehner, redrawn from Hauray and others 1959, Fig. 14 *d, f, g*. Length of *h*, 13 cm.

interval" (Hopkins 1959: 1527). He dates the last land connection between 23,000–10,000 B.C. and puts 10,000 years of water cover between this emergence and the one that next preceded it (Hopkins 1959: 1525). His Fig. 4 presents a chart that correlates sea level with ice-advance positions; this chart indicates that the optimum period for moving across the bridge occurred between 21,000–11,000 B.C., at the time of major continental ice advances. The bridge supported a tundra vegetation with a climate at least as severe as that presently known to the Chukchi and Bering areas (Hopkins 1959: 1527). Thus, the bridge was available during the period 21,000–11,000 B.C., but not for some 12,000 years before. These dates fit very well with the proffered dates for central Siberia and fall within the optimum time necessary to support the hypothesis for American developments that will be presented below. To fill out the route, Chard (1959: 44) has indicated that a northern route along the Siberian Arctic foothills "was certainly available," with conditions more favorable to animals and men than a southern route, and that these routes "would have been most feasible at times of lowered sea level associated with glacial advances."

Turning now to more southerly parts of North America, we find that several approaches to the problem of cultural relationships with those areas discussed above are possible. One approach is simply to point out similarities in tool types. Another approach is to follow Wormington (1962a: 233) and seek prototypes for American tools in Siberia. She suggests that the earliest American points were made by well-controlled percussion flaking, and presents a sequence of lanceolate, double-pointed, very well-chipped points from Siberia through unfluted Sandia points, fluted Sandia points, and finally to fluted Clovis points (1962a, Fig. 5). There is, however, no explanation of the technique involved in striking a flute from a pointed base, whereas Mason (1958: 7–16, Fig. 2) has carefully studied a large number of Clovis fluted points and has presented convincing evidence for an essentially straight-base striking platform for fluting (see also Witthoft 1952). There is also the matter of the highly questionable dating of Sandia, and Bushnell and McBurney (1959: 101) have urged the shifting of our view from a single tool type to a broader range of materials.

It seems much more profitable to examine closely the evidence for concurrences in tool

types and techniques. Wormington (1962a, 1962b) has suggested that a Levallois-Mousterian technique is present at Hell Gap and that it occurs in association with Folsom tools. Hester (1962: 96–7) has described Folsom materials from the Elida site, among which were many flakes struck from prepared cores with striking platforms at oblique angles to the axes of the flakes, lipping on the nether edge of the striking platforms and with small bulbs of percussion. This description fits many British Mountain-Kogruk flakes. As previously mentioned, Mason has made a careful examination of Clovis points from Michigan in order to determine their method of manufacture. He concludes that they are "based on generally large ovoid flakes struck from non-prismatic cores, the bulbar end of such flakes frequently defining the site of the tip end" (Mason 1958: 7). The basal edge was beveled to provide a striking platform (Mason 1958: 12) and the points were rarely thinned from the original flake thickness except by fluting. The presence of such flakes, along with Clovis points, at the Lehner Mammoth site (Haury and others 1959, Fig. 4d, f, g), and their strong similarity to flakes from British Mountain, Kogruk (Fig. 2, h–j) and, hence, Siberian complexes, is highly provocative. When the "unusual fluted artifacts" of Buret and Malta plus the incipiently fluted Irish points of the British Mountain complex are added to this picture, the hypothesis which we have been so assiduously pursuing is at hand.

According to this hypothesis (see Fig. 3), a group of hunting-oriented people, having developed efficient tools and social techniques to prey successfully upon the smaller units of the late Pleistocene megafauna, began expanding rather rapidly into areas favorable to this type of economy. Their tool-making technique was based on the Levallois-Mousterian flake tradition and developed into a flake-blade industry from which points effective in killing the smaller grazing animals evolved. Sometime during the period 21,000–11,000 B.C. these people crossed the Bering Strait which was then crossable on foot, and became the first effective, if not the initial, inhabitants of the North American continent. Kogruk and British Mountain may or may not represent the earliest penetration, but they are certainly part of this same general movement and should, therefore, date within this period. These people spread eastward along the Alaskan foothill country, then southward,

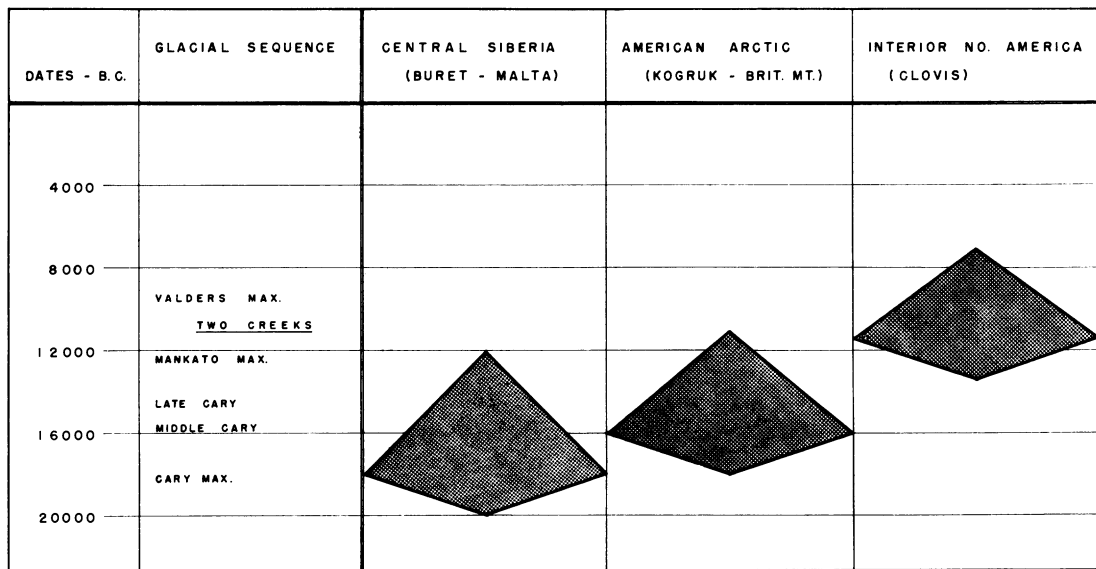


FIG. 3. Comparative time range (speculated) for earliest known hunting complexes in the areas discussed.

keeping to the foothills where, under the stimulus of a desire to include the larger mammals in their regular diet, the incipient fluting technique which was part of their cultural equipment became the instrument which provided a highly effective tool for the realization of this end. This tool was the Clovis fluted point, which was so effective that it permitted its possessors to spread very rapidly over all of North America below the Mankato ice sheet. We can, therefore, think of a Clovis horizon in the full sense of that term as set forth by Willey and Phillips (1958: 33).

A word must be said about the reasoning behind the restriction of this movement to foothill country. Irving (1953: 58) has pointed to the cardinal advantages of mountain valleys in big-game hunting under tundra conditions. These are: (1) they are relatively dry in comparison with the wet lowland tundras; (2) they have good vantage points for sighting game (note the location of American Arctic sites on high positions); (3) they offer the advantages of both forest and tundra, being open enough for easy pursuit of game but with enough tree and brush cover to provide shelter and fuel; and (4) they are preferred routes for major game trails that are otherwise restricted by rugged mountains and soggy ground. Solecki (1950: 477) has made similar observations. It should also be noted that this is the only type of environment which might be virtually continuous from cen-

tral Siberia to central North America during glacial periods. Martin (1958: 378) has suggested that tundra and cool prairie were probably not separated by forest during times of glacial advance. This would extend an essentially compatible ecological zone from Arctic regions into more southern areas at those times.

Giddings (1952) sees population movements into North America not as migrations but as slow spread. This view is not incompatible with my hypothesis; the slow spread was probably more normal, but at times when new techniques opened up new possibilities this spread simply gained speed for a while. It should also be pointed out that territories of hunting peoples of the ethnographic present are defined not so much by themselves as by their neighbors. If no neighbors exist in a particular direction, perhaps hunters are tempted to explore the store in that area.

The tentative nature of this hypothesis should be stressed. However, the growing body of ecological and cultural evidence, as well as the increasing detail in our knowledge of the nature and chronology of the glacial sequence, seem to point in the direction suggested by this paper. I have posited an essentially compatible environment in the upland foothill zones along the flanks of the almost continuous mountain chains of Siberia, Alaska, western Canada, and western United States. I have suggested that this en-

vironment was favorable, during late Wisconsin ice advances, to grazing animals and to the men who hunted them, and I have presented a chain (woefully incomplete) of sites which seems to present reasonable evidence of cultural affinities. The flake tools and the probable methods of their manufacture are such that we seem to be viewing the genesis of the Paleo-Indian cultures of the New World. The dating of both ends of the chain is reasonably firm and permits this view (Fig. 3). More importantly, these dates (20,000–15,000 B.C. for Malta; 10,000–8000 B.C. for Clovis) permit the crossing of hunting peoples into Alaska from Siberia at the most opportune time. Other peoples may also have entered the New World at this time. Chard (1959: 44) has suggested a Pacific coast route followed by peoples from more southern parts of Asia but, feasible as this suggestion is, I am not here concerned with this question. Nor am I concerned with Greenman's (1963) proposal of a route across an ice-choked North Atlantic. Why resort to fantasy when feasible proposals can be made?

Parts of the argument offered will perhaps become untenable; much of it will certainly be modified by future discoveries. However, in the light of present knowledge, the hypothesis offered appears to present a coherent and reasonably possible interpretation of early Old World–New World cultural interchange which led to the development, in North America, of the fluted point.

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